Missouri Department of Elementary and Secondary Education

2004 CENSUS OF TECHNOLOGY REPORT

"Making a Positive Difference Through Education and Service"
Dr. D. Kent King, Commissioner

September 2004

Missouri Department of Elementary and Secondary Education

A Report on the

2004 Missouri Census of Technology

Instructional Technology
PO Box 480
Jefferson City, MO 65102-0480
Phone: 573-751-8247
Fax: 573-522-1134
http://dese.mo.gov/divimprove/instrtech

Introduction

The Census of Technology (COT) is designed to assess Missouri's continuing investment in K-12 education technologies and to help guide forward efforts. It provides important data for the Department of Elementary and Secondary Education (DESE) to share with state and national decision-makers to increase public awareness and advance public policy and support for education technology. It provides local school districts with data to help identify needs and develop strategies to facilitate school improvement processes and compare district progress with statewide data. The COT is aligned with the *2002-2006 Missouri Education Technology Strategic Plan* (METSP) and is a primary data source for measuring progress toward meeting the state goals and objectives. A cross reference of the 2004 COT items and the METSP goals and objectives is provided as an appendix to this report.

A technology survey has been collected annually since 1997. Prior to 2001, DESE contracted with the University of Missouri's Office of Social and Economic Data Analysis to administer the project. In 2001, the census was incorporated into the April cycle of DESE's online core data collection system. The 2001 COT was the first to be completed by all districts; data collected prior to 2001 were adjusted to estimate the entire population.

The COT has two parts (district-level and school building-level forms) and is to be completed based on an annual census date of March 1.

1. The District Census assesses the levels of planning and training for the district as a whole and concentrates on hardware, software, and levels of connectivity for the administrative buildings and offices. Completed by district-level administrators and/or technology specialists, the District Census includes information for all Missouri school districts (524).
2. The Building Census assesses planning and training needs for individual school buildings and focuses on hardware and levels of Internet connectivity in computer labs, libraries, and classrooms. Completed by building-level administrators or technology contacts, the Building COT collects data from preschools, elementary schools, middle schools, junior high schools, high schools, area career centers, and the majority of charter schools (those in operation at least one full year prior to the Census date). Exempted buildings include juvenile centers, special education cooperatives, buildings where attendance is reported at another building (such as a gifted center), or other buildings with no enrollment data.

This *2004 Census of Technology Report* arranges the 2004 data for both the district and building levels according to the following areas: technology planning, technology professional development, hardware and support, Internet connectivity-distance learning, technology usage, and technology funding. Where feasible and appropriate, this report presents and compares information from previous years. Aggregated responses for the district and building census forms are provided in the Appendix section of this report.

This report is one of several documents that examine the use and effectiveness of education technologies in Missouri. Other evaluation information can be found in the Missouri Education Technology Strategic Plan reports, eMINTS Program research reports, annual technology program reports, project descriptions, and annual evaluation narratives – all of which may be accessed from the Instructional Technology website at http://dese.mo.gov/divimprove/instrtech.

For additional information regarding the Census of Technology, contact the Instructional Technology section by telephone at 573-751-8247or email at instrtech@dese.mo.gov.

Table of Contents

Executive Summary

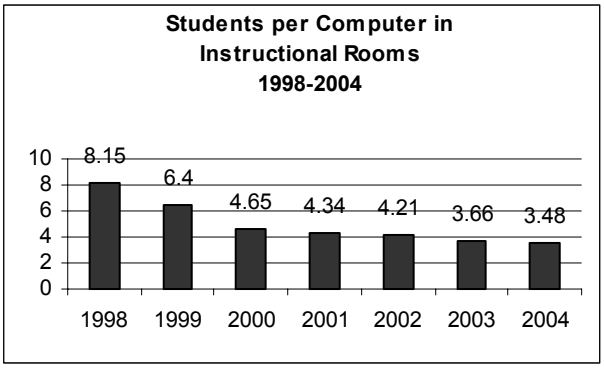
The Census of Technology shows modest but consistent improvement in Missouri's schools with regards to technology readiness and use during the 2003-2004 school year. Despite a year afflicted with sluggish economies at the state and local levels and significant decreases in state funds (including the zero funding of the Technology Acquisition Grant Program), Missouri schools continued to improve access to education technologies for administrators, faculty, staff, and students and report increases in their quality uses of those technologies.

While advancements are slight, the 2004 data indicate that more schools are connected to one another and the Internet and more educational technologies are provided for teachers and students. Students, teachers, and administrators continue to become better skilled in using education technologies and, more importantly, continue to increase the frequency in which they use the technologies in meaningful ways.

Building Access – Of the 2,207 school buildings reporting, nearly 1900 or 83.9 percent have a T1 or higher Internet connection, compared to 83.5 percent in 2003 and 81.4 percent in 2002.

Classroom Access – Out of 60,856 classrooms, 56,064 (92 percent) are wired for the Internet, and 53,663 classrooms (91 percent) have at least one Internet-connected computer.

Computer Access – Out of the 273,636 computers located across the buildings, 257,347 computers (94 percent) are located in instructional rooms: with 151,962 computers located in classrooms, 84,162 in computer labs, and 21,233 in library media centers.



- The 2004 number of students per computer (all computers located across all buildings) is 3.26, compared to 3.29 in 2003 and 3.8 in 2002 and 2001.
- The number of students per computer in instructional rooms is 3.48, compared to 3.66 in 2003, 4.21 in 2002, and 4.34 in 2001.
- The number of students per computer in classrooms is 5.89, compared to 6.42 in 2003.

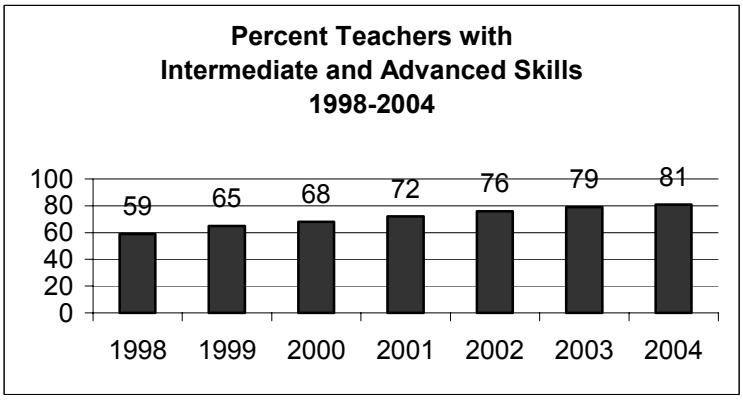
Principal Technology Skills – In 2004, schools report that 97 percent of the principals routinely use email – the same rate reported in 2003 and compared to 92 percent in 2002 and 74 percent in 2001. The rate of principals routinely conducting online research is 80 percent, compared to 79 percent in 2003, 69 percent in 2002, and 58 percent in 2001.

Teacher Technology Skills – In 2004, schools report that 78 percent of teachers routinely use educational software, compared to 76 percent in 2003, 71 percent in 2002, and 59 percent in 2001. The rate of teachers routinely using technology for lesson plan preparation is 66 percent, compared to 64 percent in 2003, 59 percent in 2002, and 45 percent in 2001.

Student Technology Skills – In 2004, schools report that 81 percent of students routinely use educational software, compared to 80 percent in 2003, 75 percent in 2002, and 62 percent in 2001.

- In 2004, 81 percent of teachers have intermediate and/or advanced technology skills, compared to 79 percent in 2003, 76 percent of teachers in 2002, and 72 percent in 2001.

- Approximately 92 percent of principals have intermediate and/or advanced technology skills, compared to 90 percent of principals in 2003 and 82 percent in both 2002 and 2001.



- Approximately 86 percent of sixth-grade students are technology literate.

A compendium of the 2004 Census of Technology findings follows:

Technology Planning

- All districts have state-approved technology plans
- 2,144 school buildings (97%) have building technology plans

Technology Professional Development

- 88% of districts have board-approved education technology standards
  - 80% have locally developed standards and 27% have adopted the National Educational Technology Standards (NETS)
  - 83% have standards for middle schools/junior high students (grades 6-8), compared to 80% for students in grades 3-5, 72% for high school students (grades 9-12), and 77% for PreK-2 elementary students
  - 79% have standards for teachers, 76% for school administrators, and 67% for support services staff
- The percentages of staff with intermediate and/or advanced skills in the use of education technology are as follows:
  - 97% of technology staff
  - 92% of school building administrators
  - 91% of district office administrators
  - 81% of teachers
  - 71% of school services staff
- Schools typically offered 128 hours of professional development activities during the 2003-2004 school year, where teachers could learn or upgrade their technology skills. Topics included:
  - 52 hours – using software applications
  - 27 hours – teaching applications
  - 27 hours – using Internet resources
  - 22 hours – curriculum integration

Hardware and Support

- On average, districts provided 2.09 FTE for technical maintenance and support
  - School building technical support was most likely provided by district staff, followed by school certificated staff and other school staff
- District administrative/office staffs use 16,077 computers
  - 94% of the computers are PCs or PC-compatible and 6% are Apple/Mac computers
- School buildings provide access to 273,636 computers,
  - 84% are PCs or PC-compatible and 16% are Apple/Mac
  - 77% of the PC-compatible computers run on Windows 2000 or earlier (older), while 72% of the Apple/Mac computers run on OS 9.x or earlier
  - 94% of all computers are located in a classroom, computer lab, or library media center (LMC)
- Of the 66,840 classrooms, computer labs, and LMCs,
  - 92% are wired for Internet access
  - 89% have multimedia-equipped computers
  - 89% have at least one multimedia-equipped and Internet-connected computer
  - 57% have telephone access
  - 26% have a teacher workstation that includes an Internet-connected computer, printer, and projection device
- The typical time-frame for resolving technical problems and repairs is under three working days

Internet Connectivity – Distance Learning

- 97% of the districts have district-managed networks
  - Novell is the predominant operating systems on network servers (41% of servers), followed by Windows 2000 (19%), and Windows NT (19%)
  - District networks support accounting/payroll (for 98% of the districts), student attendance (88%), email/communications (86%), food service (82%), library catalog (82%), discipline reports (68%), health service (66%), IEP management (66%), and student performance (58%)
- 84% of the school buildings have a T1 or higher Internet connection
- 80% of the buildings are connected to the district office and all other buildings in the district through a local or wide area network
- District servers support Internet filtering (1,414 servers), email (1,316 servers), and web services (1,036 servers)
- Almost 1,300 buildings have distance learning access via cable television, while nearly 900 have desktop videoconferencing, over 500 have satellite reception, and 390 have interactive television (I-TV)

Technology Usage

- 99% of districts report having technology integrated into one or more core content curriculum: 95% in communications arts, 87% in science, 86% in mathematics, and 85% in social studies
- Email accounts are provided for school administrators in 98% of the districts, teachers in 93% of the districts, and other district staff in 82% of the districts. As for students, districts provide email accounts to high schools students in 125 districts, to middle school students in 72 districts, students in grades 3-5 in 51 districts, and PreK-2 students in 22 districts

- On average, districts estimate that 86% of their sixth-grade student population is technology literate, with over half of the districts reporting at least 90%
- Buildings report the following routine use of technology, by application and user type

Application	*Principals*	*Teachers*	*Students*
Educational software	43%	78%	81%
Email	97%	90%	13%
Internet/ Web	96%	91%	74%
EBSCO host database	21%	34%	31%
Electronic encyclopedia	20%	39%	44%
Automated Library Card Catalog	27%	54%	62%

- Buildings estimate the following routine uses of technology, by function and user type

Function	*Principals*	*Teachers*	*Students*
Produce media/multimedia products to demonstrate learning	50%	47%	29%
Produce written/print products to demonstrate learning	77%	81%	46%
Communicate with parents and students	7%	66%	77%
Conduct online research	80%	75%	Na
Lesson plan preparation	15%	66%	Na
Manage student records (spreadsheet/database)	83%	70%	Na
Track student performance	81%	74%	Na
Assess Student Performance	72%	69%	Na
Instructional delivery/presentation	39%	51%	Na
Enrolled in online courses (this year)	7%	9%	Na

- Buildings report that those responsible for the leadership and support of teachers in integrating technology are most commonly a school administrator (in 59% of the buildings), technology coordinator (58%), teacher (48%), and instructional technology specialist (32%)
- Buildings estimate that 53% of the teaching staffs fully integrate technology into the curriculum
- All buildings use email as a technology-mediated feedback system, followed by voice mail (1,062), listservs (300), automated absentee calling systems (283), homework hotlines via the telephone (281), and homework hotlines via the web (194)

Technology Funding

- Districts project spending $92,017,216 in 2003-2004 for technology-related activities and purchases.
  - 57% of the budget supports hardware, connectivity/distance learning, and infrastructure
  - 21% of the budget is for technical support
  - 15% of the budget is for instructional and/or administrative software
  - 8% of the budget supports professional development
- Districts project spending $87,653,389 in 2004-2005
  - Districts project spending less on hardware, professional development, instructional software, and technical support
  - Districts expect to spend more on administrative software and connectivity/distance learning
  - Districts expect to spend about the same for infrastructure/retrofitting
- 381 districts (73%) applied for E-rate discounts in 2003-2004
  - Districts project discounts to amount to $32,575,547
  - 74% of the discounts are used to support education technology

This section of the *2004 Census of Technology Report* analyzes district-level data, compares current data with previous years' data, and notes interesting trends or anomalies over time. All 524 Missouri school districts completed the COT in 2004. The District Census is a quick survey, with 15 items that address technology planning, standards, district-provided administrative systems and support, and budgeting. See Appendix A for a copy of the district survey, completed with aggregated data; Appendix B for a copy of the building survey, completed with aggregated data; and Appendix C for a cross reference of the 2004 COT items and METSP goals and objectives.

Even with losses in state funding, particularly the Technology Acquisition Grant (TAG) program, district responses to the 2004 COT indicate continued progress in technology readiness and use. Missouri districts appear to be making effective use of technology for administrative purposes, managing networks and systems that help improve district administration, data management, and communication.

Technology Planning

The district-level COT examines the presence of a board-approved and state-approved long range technology plan and partners that help the district support technology and implement school improvement and technology plans. A school district's long-range technology plan provides a road map for how the district will implement strategies that promote the district's mission, advance its comprehensive school improvement plan (CSIP), and improve teaching and learning through the use of education technologies. DESE began approving technology plans in 1997 as a requirement for the E-rate program. Early district technology plans dealt mostly with hardware and equipment and did little to address integration, student learning, or technology professional development. Beginning in 1999, a state-approved technology plan became a requirement for participation in the state's technology grant programs and the MOREnet Technology Network Program. With the passing of the federal No Child Left Behind Act (NCLB) in 2001, DESE developed the 2002-2006 Missouri Education Technology Strategic Plan (METSP) and updated accordingly the scoring criteria used to approve district technology plans. Both the state plan and scoring criteria focus on the development of plans that align with comprehensive school improvement plans and promote effective teaching strategies, student achievement, and adequate infrastructure and technical support.

Item 1 – State-approved technology plans

All districts have state-approved district technology plans, with 16 districts having their plans approved in 2002, 451 districts in 2003, and 69 districts in 2004. By June 2004, all districts had a plan approved using the scoring guide developed in 2002 in response to the NCLB Act and the Missouri state plan.

Item 2 – District business and higher education partners

Item two asked districts about partners that are formed and designed to increase access and use of education technology through such means as donating or providing equipment, software, technical support, professional development, consulting services, and funding. As Table 1 indicates, the number of districts that report having a technology partner has fluctuated between 27 to 31 percent for the last five years. In 2004, however, 60 percent of districts report having one or more technology partners. The reporting of the types of partners is more consistent. A district "technology" partner is more likely to be a college or university, than a technology-related business or a non-technology related business.

Table 1

Districts with a Technology Business or Higher Education Partner, 1998-2004

	1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*
Districts with Partners	22%	27%	29%	31%	27%	31%	60%

Technology Professional Development

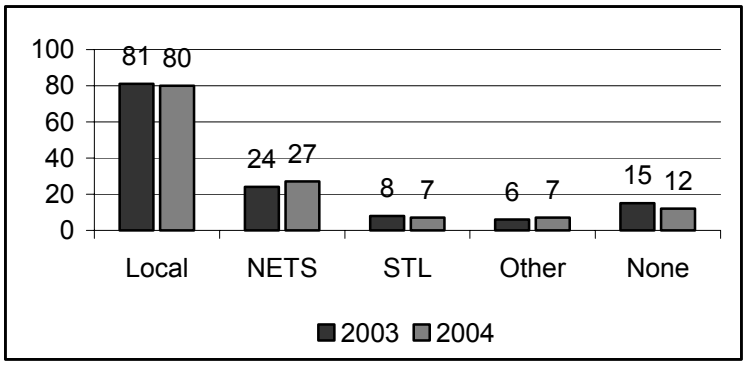
In November of 1997, the State Board of Education established policy that requires buildings to allocate amounts equal to 20 percent of state technology grant funds for technology-related training. The policy went into effect for the 1998-1999 school year. The Title II.D (Ed Tech) Program, begun in 2002-2003, requires that 25 percent of formula and/or competitive grant funds be earmarked for professional development. Professional development is a critical factor in teachers using technology in meaningful and effective ways. Data collected over the previous years indicate that teachers are increasingly interested in professional development sessions that address how to integrate technology into curriculum and instructional teaching strategies. Professional development is most effective when tied to local, state, and national educational technology standards. The Missouri technology plan endorses the National Educational Technology Standards (NETS) for students, teachers, and school administrators developed by the International Society for Technology in Education (ISTE).

Item 3 – Education technology standards

Added to COT in 2003, item three asked about educational technology standards in place in districts. Standards provide guidelines for developing curriculum and guiding teacher and student behavior; they define a common agreement on what ought to be taught or learned. Educational technology standards serve as guidelines for planning technology-based activities in which students achieve success in learning communication and life skills. In 2004, the vast majority of districts (88 percent) report having board-approved standards for students and school employees. Figure 2 shows that four out of five (417) districts have standards developed by the district, with one in four (140) having adopted the NETS, and one in sixteen (34) adopting the Standards for Technological Literacy (STL) endorsed by the International Technology Education Association (ITEA). Thirty-five districts report having other standards, while 64 districts (12 percent) report having no board-approved standards. The 2004 data closely parallel the data collected in 2003, as illustrated below.

Figure 2

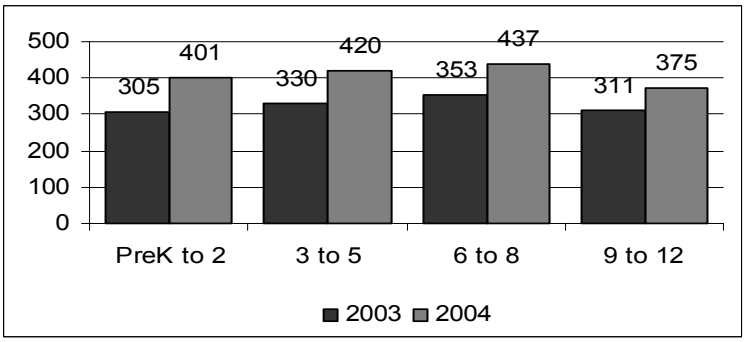
Percent Districts with Education Technology Standards, by Standard Type



Over 80 percent of districts have technology standards for students: 437 districts have established standards for middle school students, 420 have standards for elementary school students, 401 have standards for primary school students, and 375 have standards for high school students. Three of five districts housing area career centers also indicate having standards. The numbers of districts having established technology standards increased from 2003 to 2004, for all grade levels, as indicated in Figure 3 below.

Figure 3

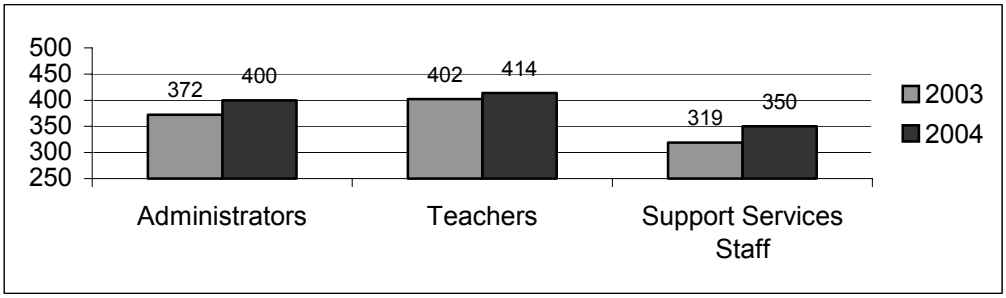
Number Districts with Student Education Technology Standards, by Grade Spans



Four of five districts (80%) have technology standards for district employees: 414 districts have standards for teachers, 400 districts have standards for administrators, and 350 districts have standards for support services staff. Similar to the status of student standards, the number of districts that report having standards for school employees has increased from 2003 to 2004, as illustrated in Figure 4 below.

Figure 4

Number Districts with Education Technology Standards for District Employees



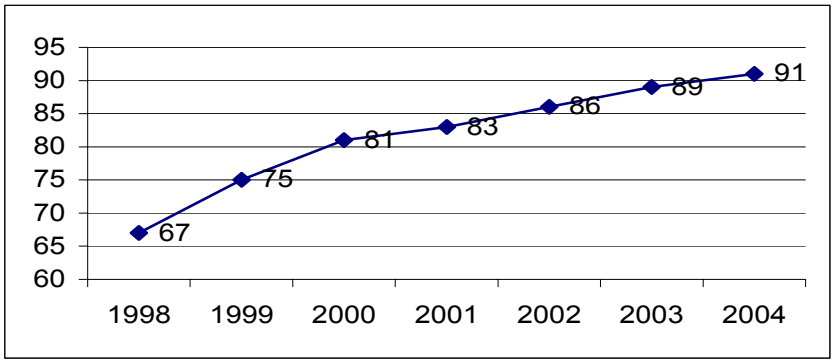
Item 4 – Technology skills of administrative office staffs

Item four asked districts to estimate the skills levels of administrators and support staff located in the administrative offices. The possible skill levels included: Beginner – Basic technical skills including applications such as word-processing, some stand-alone software, and some Internet usage (email). Intermediate – Regular use of applications, software, and Internet resources for increased productivity. Use of applications including word-processor for student writing, research on the Internet, computer-generated presentations. Advanced – Complete integration and mastery of the technology, using it effortlessly as a tool to accomplish a variety of learning, instructional and/or

management tools. In 2004, districts estimate 91 percent of administrators and 85 percent of support services staff have intermediate or higher skills in the use of technology. Table 5 in indicates the steady increase in administrators' skills reported since 1998.

Figure 5

Percent Administrators with Intermediate or Advanced Technology Skills, 1998-2003



Hardware and Support and Connectivity

The district COT looks at who is responsible for technology hardware and support in the district and the administrative technologies in place in the district. Access to current technologies is an essential condition for district operations as well as for teaching and learning. Technology is essential to effective and efficient district administration, communications, and data management. Having district technology staff that help with planning, purchasing, installing, and supporting district technologies is key.

Item 5 – District technology staff

Item five asked districts to estimate the total number of district-level, full-time equivalent (FTE) staff who are responsible for technical maintenance and support. Districts report having an average of 2.09 technical staff, reflecting a drop from the 2.18 reported in 2003. While it isn't likely that all districts have two district technology staff persons, it is encouraging to see the number of technical staff remain fairly consistent – despite the tight budget year.

Item 6 – Administrative office technology

For item six, districts entered the quantities of computers located in the district administrative office(s). Table 6 compares district office computer and software holdings in 2003 and 2004. In keeping with findings from earlier years, administrative offices have computers that are predominantly PCs or PC-compatible. Table 6 also indicates that many districts upgraded operating systems and Acrobat Reader software since last year.

Item 8 – District network servers

Item eight asked districts to identify the operating systems used by servers located in district administrative buildings/offices. As noted in 2003, Novell is the predominant system (used in 283 districts), followed by Windows 2000 (131), Windows NT (130), and Linux (88).

Table 6

Computers and Software in District Administrative Buildings, 2003 and 2004

	2003	*2004*
Computer Platforms		
• Apple/Mac	876	895
• PC/PC-compatible	14,359	15,182
Operating Systems		
• Apple/Mac		
OS.9X	79%	53%
OS.10x	21%	47%
• PC/PC-compatible		
Windows 2000 or older	79%	64%
Windows XP	13%	33%

	2003	*2004*
Acrobat Reader Software		
• Apple/Mac		
4.x or earlier	56%	21%
5.x or newer	44%	79%
• PC/PC-compatible		
4.x or earlier	29%	17%
5.x or newer	71%	83%

Item 9 – District-supported administrative systems

Added in 2004, item 9 examines district administrative systems – computer programs that are used to expedite the storage and use of data and information. Table 7 details the systems supported by a majority of the districts. Almost all districts have accounting systems and over 450 of the districts support automated student attendance and electronic mail (email). Systems supported by less than half of the districts include school safety (69 districts), teacher evaluation (103), instructional management (108), distance education (134), extracurricular scheduling (181), and website hosting (196)

Table 7

District-supported Administrative Systems

System Type	*Number of Districts*
Accounting/budgeting/payroll	511
Student attendance	461
Communication/email	452
Food service	431
Library catalog	432
Discipline	355
Health service	346
IEP management	345
Student performance	304

Technology Usage

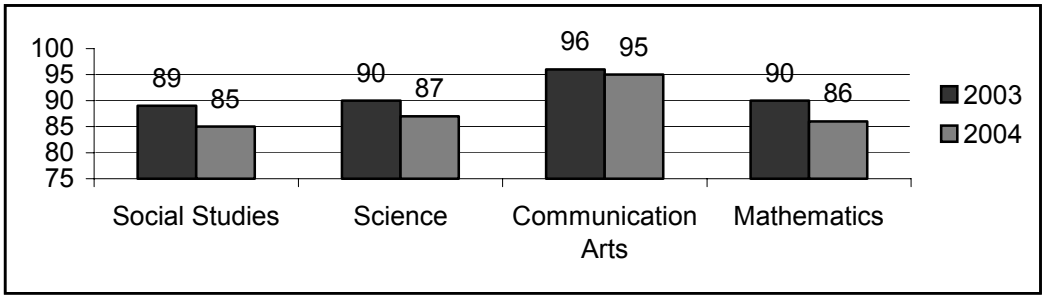
Previous items examined technology readiness, with integrating technology as the goal of making technology available and accessible. Technology usage items look at technology integration, the incorporation of technology resources and technology-based practices into daily routine – of districts, school employees, teachers, and students. At the district level, technology usage items check to see how districts support a culture that embraces technology and accepts technology as natural to the business of everyday work. Major goals of the Title II.D Program call for all districts to have technology integrated into core curricula and for students to be technology literate by the end of the eighth grade.

Item 10 – Curriculum integration

All but four districts report that technology is integrated into one or more core curriculum areas. Technology integration is defined as "written curriculum that incorporates content and processes (teaching, professional development, and assessment) related to technology resources, equity of resources, research and workplace readiness skills. Technology supports overall goals and objectives and makes possible and enhances the use of multiple instructional resources and teaching strategies (e.g., use of project-based learning, collaborative and cooperative learning, ongoing questioning, expert assistance, and critical analysis)". Figure 8 shows that technology is integrated in communication arts for 502 districts (96 percent), science for 472 districts (90 percent), mathematics for 469 districts (90 percent), and social studies for 464 districts (89 percent).

Figure 8

Percent Districts with Technology Integrated in Curriculum, by Subject



Item 11 – District-provided email

Districts, for item 11, indicate the percentage of employees (by type) and students (by grade-level spans) who are provided email accounts. Table 9 shows that the vast majority of districts (over 94 percent) provide email accounts to employees, but only a few districts provide accounts to students. Compared to 2003, the first year this item was asked, the 2004 data indicate a slight increase in the number of districts providing accounts to employees and a slight decrease in the number providing email for students – in all grade spans except for high school.

Table 9

District-Provided Email Accounts, 2003-2004

	2003		*2004*	
Population	*# Districts*	*% Districts*	*# Districts*	*% Districts*
District Employees				
• School administrators	504	96%	515	*98%*
• Teachers	499	95%	510	*97%*
• Support services staff	477	91%	494	*94%*
Students				
• Pre K-2	31	6%	22	4%
• 3-5	58	11%	51	10%
• 6-8	81	15%	72	14%
• 9-12	108	21%	125	24%

The districts that do provide email accounts cover almost all of their administrators, over 90 percent of teachers, over 80 percent of support services staff, and about half or more of their students. Table 10 indicates a slight increase in the percentage of coverage for most populations from 2003 to 2004.

Table 10

Coverage of Email in Districts Providing Email Accounts, 2003-2004

District Employees	*2003*	*2004*
School administrators	95%	98%
Teachers	92%	93%
Support services staff	79%	82%

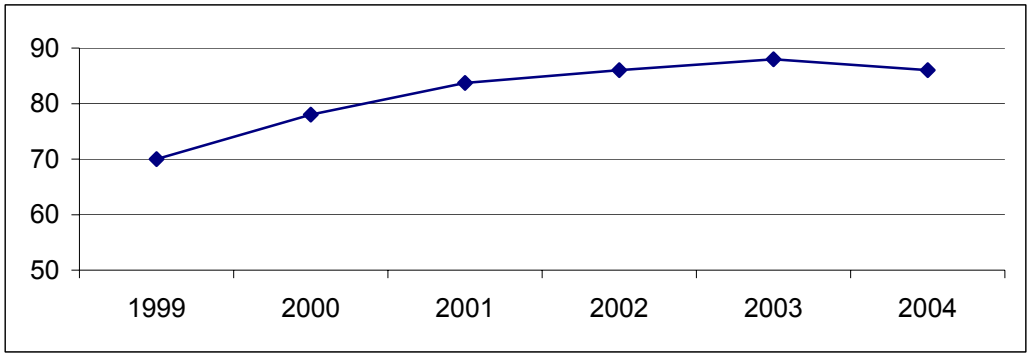
Students	*2003*	*2004*
Pre K-2	70%	77%
3-5	66%	54%
6-8	69%	72%
9-12	52%	45%

Item 12 – Technology literate students

Since 1997, COT has asked districts to estimate the percentage of students in the sixth grade who are computer literate, a goal set forth by Governor Mel Carnahan in January of 1997. For 2004, the item was changed from asking about basic computer skills to technology literacy to align with goals of the Title II.D Program and the NETS for Students. Technology literacy is defined as being able to "apply strategies for identifying and solving routine hardware and software problems that occur during everyday use; exhibit legal and ethical behaviors when using information and technology; use content-specific tools, software, and simulations to support learning and research; design, develop, publish, and present products using technology resources that demonstrate and communicate curriculum concepts, and select and use appropriate tools and technology resources to accomplish a variety of tasks and solve problems." Perhaps because of the strengthened definition and as depicted in Figure 11, the percentage of sixth-grade students estimated to be technologically literate in 2004 is 86, compared to 88 percent of students estimated to be computer literate in 2003.

Figure 11

Percent Technology Literate Students[(1)] in Grade 6, 1999-2004



[(1)] COT item changed from "basic computer skills" to "technology literacy" in 2004.

Technology Funding

Districts are asked about their technology funding habits to study budget trends with regards to how much districts are spending on technology and how the expenditures break down by cost categories.

Item 13 – Technology budgets
Districts detail technology-related costs for "last" and "current" fiscal years and project costs for "next" fiscal year. From 1999 to 2001, districts consistently reported budget costs averaging $60-$64 million. Expenditures in FY02 and 03 exceeded $92 million, peaking in FY03. Districts in 2004 estimate technology budgets totaling under $88 million next year. Table 12 indicates total projected and actual expenditures for major budget items, for fiscal years 2003, 2004, and 2005. Note that the item was revised in 2002 to better align with major cost categories addressed by "total cost of ownership" studies.

Table 12

Technology Budgets and Expenditures, 2002-2004

Technology Budget Items (in millions)	*FY 2003*		*FY 2004*		*FY 2005*
	Estimated (2003 COT)	*Expended (2004 COT)*	*Projected (2003 COT)*	*Estimated (2004 COT)*	*Projected (2004 COT)*
Hardware/Equipment	$45.057	$40.328	$37.188	$38.380	$34.986
Instructional Software	12.784	6.240	5.077	5.840	5.625
Administrative Software	5.486	5.364	6.609	7.689	8.014
Professional Development	7.902	6.993	7.438	7.229	6.624
Connectivity-Distance Learning	5.456	5.295	5.473	4.832	5.308
Technical Support	17.974	19.480	17.423	19.100	18.589
Infrastructure/Retrofitting/Other	13.334	8.696	11.360	8.948	8.867
Total	$107.993	$92.397	$90.569	$92.017	$87.653

Total dollars spent on hardware items, and the percentage of total funds spent on hardware, are gradually decreasing, while the reverse is true about administrative software. Expenditures (dollars and percentage of funds) supporting professional development, connectivity-distance learning, technical support, infrastructure, and instructional software have remained fairly constant.

Items 14 and 15 – E-rate discounts
Item 14 asked districts if they participated in the 2003-2004 Universal Service Fund's E-rate program, and item 15 asked what percent of the discounts/savings to be received by the E-rate program would be used to support education technology activities and expenditures. Each year, MOREnet files an E-rate application on behalf of the 510-plus districts and state schools that participate in the statewide network project (TNP). Districts file separate applications for telecommunications, non-MOREnet related Internet costs, and internal connections. In 2004, 381 districts (73 percent) report applying for E-rate discounts and receiving funding commitment decision letters (FCDLs) that total over $32.575 million and average around $85,500. In 2003, 374 districts (71 percent) received FCDLs totaling over $41 million. In 2004, districts projected that 74 percent of the savings would be used to support technology-related activities and expenditures, compared to 61 percent reported in 2003.

This section of the *2004 Census of Technology Report* analyzes data from 2207 buildings, compared to 2250 buildings in 2003. While all buildings in the state complete the School Building Census Form, the report only covers those buildings with regular student populations. Data from juvenile centers, special education cooperatives, and other buildings (such as a gifted center) where attendance is reported at another building are not included in the 2004 report. Aligned to the Missouri State Education Technology Strategic Plan (METSP) technology focus areas, the intent of the school building census is to examine access and distribution of technology resources, technical support, teacher and student technical skills, and the routine uses of technology by user and technology type or function. A copy of the survey, completed with aggregated data, is provided as Appendix B. A copy of the District census is provided as Appendix A, and a cross reference of the 2004 COT items and METSP goals and objectives is provided as Appendix C.

The 2004 data indicate continued improvements in the kinds and numbers of technologies that can be accessed in Missouri's school attendance centers as well as in the ways school administrators, teachers, and students are using technology resources. While most of the gains are rather modest, they are impressive in light of the tight budget year as explained earlier in this report. Too, some of the differences (or the magnitude of differences) noted in data from 2003 to 2004 might be attributable to the change in reporting only buildings with regular student attendance.

Technology Planning

As with the district COT, the building census examines the presence of a long-rage technology plan and partners that help the school building support technology. A school building long-range technology plan, like a district plan, should provide a road map to help the school implement strategies that promote the district's mission, advance district and building improvement plans, and improve the teaching and learning occurring in the building.

Item 1 – Building technology plans

Buildings are asked if they have their own technology plans and, if so, whether they are stand-alone plans and/or are embedded in district plans. Assuming that building plans should be integrated in a district plan, the item was reworded in 2003 to the "stand alone" plan. Table 13 indicates the percentage of school buildings that have technology plans, the percentage of building plans that can serve as stand-alone plans, and those included in district plans. Data show a continued trend in buildings having technology plans, starting with only 69 percent of buildings having plans in 1998 to 97 percent having plans in 2004.

Table 13

Status of Building Technology Plans, 1998-2004

	1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*
Building has a technology plan	69%	83%	83%	83%	83%	95%	97%
Plan is part of the district technology plan	64%	96%	96%	96%	96%	88%	89%
Building has a stand-alone plan	NA	NA	NA	NA	NA	6%	7%

Item 2 – Building technology partners

School buildings, like districts, are asked to identify any business or higher education institution with which they partner to support building technology. About three in ten buildings in 2004 have a technology partner. Table 14 indicates the type and frequency of building partners reported for the last three years. An increase in the use of partners was noted in 2003, with another (though smaller) increase noted in 2004. Interesting in 2004 is the shift from working predominantly with

colleges and universities to businesses – particularly technology-related businesses. These changes might be results of the decreases in state funding available to schools during the past two years.

Table 14

School Building Technology Partners, 2002-2004

Buildings with Partners	*2002*	*2003*	*2004*
College/University	256	290	237
Business – Technology Related	167	169	277
Business – Other	113	164	147

Technology Professional Development

The use of technology in the school setting requires professional development aimed at helping educators integrate the appropriate education technologies into curriculum content, instructional teaching strategies, and day-to-day business. Teachers, administrators, and school services staff need regular, ongoing, and quality professional development that helps them gain the confidence and skills needed in using the school's technologies – that promote district and school improvement plans and align with Show-Me Standards, board-approved curriculum, and board-approved educational technology standards.

Item 3 – Building technology professional development

Building contacts were asked to detail technology professional development offered during the 2003-2004 school year. In total, schools reported offering 83,874 hours of professional development for administrators, 123,650 hours for teachers, and 74,889 for support services staff. Tables 15 and 16 indicate the number of hours of training, by trainee and training type. Baseline data from 1999 are compared to data collected in 2002 through 2004. Table 17 details professional development offerings to support services staff for 2003 and 2004, the only years these data were included.

The number of technology-related professional development offerings (in numbers of hours) appears to have peaked in 2002 and 2003, as indicated in Tables 15 and 16. While there was a slight decrease in the hours offered in 2004, the rank orderings of topics remain the same. Software application training was the only topic to be offered more in 2004 than in 2003, averaging over 18 hours for teachers, nearly 18 hours for support services staff, and almost 16 hours for administrators. Other training topics offered most often during 2004 include curriculum integration for both administrators and teachers and teaching applications for teachers. Training for support services staff almost exclusively addressed using software applications.

Table 15

Education Technology Training Hours Offered to Administrators, 1999, 2002-2004

Training Type and Hours	*1999*	*2002*	*2003*	*2004*
Administrators				
• Introduction of operations	4.2	5.38	5.38	4.21
• Using software applications	9.9	10.77	10.77	15.79
• Using Internet resources	5.4	6.36	6.36	4.75
• Curriculum integration	4.4	7.06	7.06	6.89
• Teaching applications	3.3	6.24	6.24	4.51
• Using assistive devices	NA	2.09	2.09	1.33

Table 16

Education Technology Training Hours Offered to Teachers, 1999, 2002-2004

Training Type and Hours	*1999*	*2002*	*2003*	*2004*
Teachers				
• Introduction of operations	6.3	7.64	8.22	6.03
• Using software applications	16.3	14.70	16.23	18.21
• Using Internet resources	9.1	9.39	10.20	7.94
• Curriculum integration	8.1	10.79	13.98	10.94
• Teaching applications	7.9	8.60	10.50	9.78
• Using assistive devices	NA	2.75	2.98	2.30

Table 17

Education Technology Training Hours Offered to Support Services Staff, 2003-2004

Training Type and Hours	*2003*	*2004*
Support Services Staff		
• Introduction of operations	4.30	3.81
• Using software applications	8.67	17.80
• Using Internet resources	4.60	4.13
• Curriculum integration	4.12	4.63
• Teaching applications	3.01	2.85
• Using assistive devices	1.48	.56

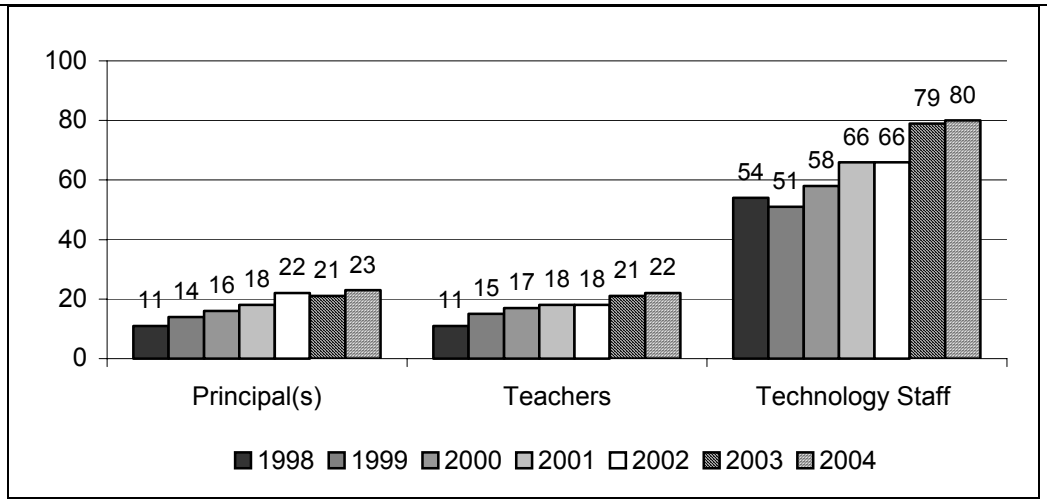
Item 4 – Technology skills of building staffs

Building contacts are asked to estimate the technology-related skill levels of principals, teachers, technical staff, and support services staff. Like for the district COT, the skill levels are: Beginner – basic technical skills including applications such as word-processing, some stand-alone software, and some Internet usage (email); Intermediate – regular use of applications, software, and Internet resources for increased productivity and the use of applications including word-processor for student writing, research on the Internet, computer-generated presentations; and, Advanced – complete integration and mastery of the technology, using it effortlessly as a tool to accomplish a variety of learning, instructional and/or management tools.

Figure 18 illustrates the increase in the percentages of teachers, building administrators, and technology staff rated to have advanced technology skills from 1998 through 2004. (The support services staff category was not added until 2003.) In 2004, close to one-third (29 percent) of the school support services staff was estimated as having beginner technology skills, one-half (52 percent) having intermediate skills, and one-sixth (19 percent) having advanced skills. The proportion of teachers estimated as beginner technology users has steadily decreased from the 40 percent reported in 1999 to the 19 percent reported in 2004. Likewise, the rate of administrators (e.g., principals) estimated as beginners has decreased from 35 percent in 1999 to 8 percent in 2004. Accordingly, the percentages of staff rated to have advanced skills have improved dramatically. The rates of teachers and principals reported as advanced users have nearly doubled from 11 to 22 percent. The group with the highest rate of advanced skills includes technology support staff, at 80 percent.

Figure 18

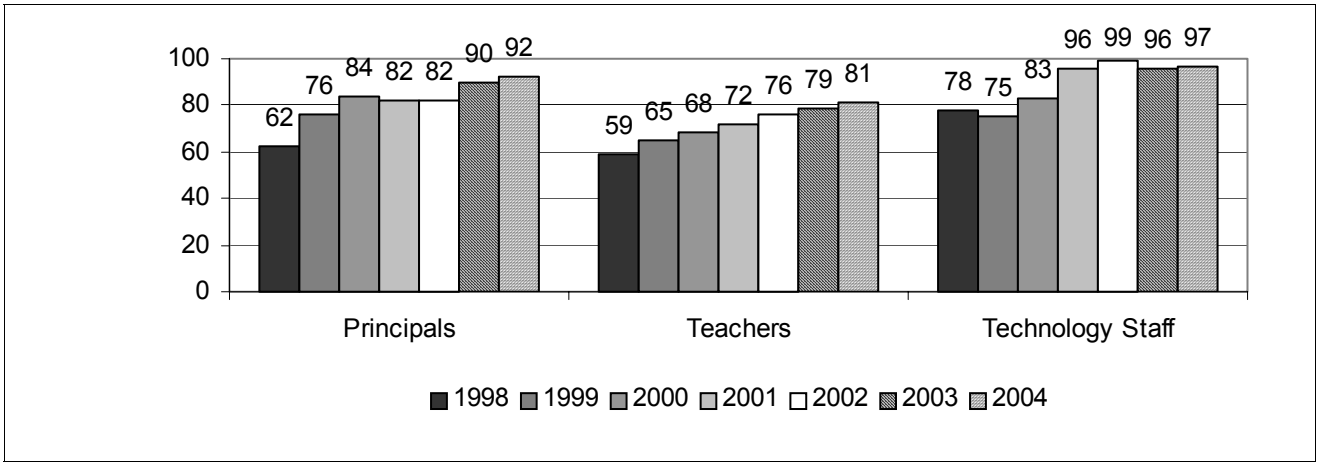
Percent Building Faculty/Staff with Advanced Skills, 1998-2004



The differences among the user groups are somewhat less marked when looking at combined intermediate and advanced skills, as indicated below in Figure 19. Almost all of the technology staffs (97 percent) have intermediate or better skills. Principals are close behind at 92 percent, followed by teachers at 81 percent, and support services staff at 71 percent.

Figure 19

Percent Building Faculty/Staff with Intermediate or Advanced Skills, 1998-2004



Item 5 – Number of days of professional development

Added in 2004, item five asked schools to report the number of days during the year that were scheduled for professional development activities where teachers in the building could learn and upgrade their technology and computer skills. In 2003-2004, buildings reported a total of 8,341 days, averaging about four days per building.

Item 6 – Number of eMINTS-trained teachers
Also added in 2004, item six tracks the numbers and locations of teachers who have participated in eMINTS professional development. Begun in 1999-2000, the *enhancing* Missouri's Instructional Networked Teaching Strategies Program serves as the state's instructional model of technology integration. eMINTS instructional staff have provided the two years of professional development for the majority of eMINTS teachers, with a small number of eMINTS teachers receiving their professional development from district staff that participated in the eMINTS program for education technology specialists. In 2004, contacts from 273 buildings report having 594 teachers with one or both years of eMINTS professional development.

Hardware and Support I
Hardware and support items deal with technology access and support. Hardware and Support I deals with technical support, computer types and quantities by location, operating and reader software, and library automation. Hardware and Support II looks at equipment access and connectivity by location, various technologies located in the buildings, and typical technical problems/repairs resolution.

Item 7 – Building technical support
As a rule, building-level technical support is provided by district-level staff (true in 78 percent of the buildings) and/or by one or more certificated staff located in the building (true in 36 percent of buildings). Table 20 indicates the types of staff or others located in, or made available to, the buildings, as reported in 2003 and 2004.

Table 20
Persons Responsible for Building-Level Technical Support, 2003 and 2004

	Buildings Responding	
Staff / Persons Responsible	*2003*	*2004*
District staff	50%	78%
School certificated staff	26%	36%
School non-certificated staff	19%	21%
Vendor/Contractor	18%	18%
Students	5%	9%

Item 8 – Computers in the building
Annually, buildings report on the types and locations of computers in the buildings. Computer "type" clusters machines by platform and speed / capacity. Locations include: Computer Labs, specifically designated for computer work; Instructional Rooms, designated as classrooms, and Library/Media Centers, designated for library and media services. In 2004, the Instructional Rooms were broken out into grade spans of PreK-2, 3-5, 6-8, 9-12, and area career center.

As indicated in Table 21, buildings reported a total of 273,636 computers in 2004 – a slight increase from the 270,368 building computers reported in 2003. Over 80 percent of the computers are PCs or PC-compatible, with 16.4 percent being Apple or Mac. Over 260,000 of the computers (95 percent) are considered capable of running the Internet at high speeds. To be considered Internet-capable, a computer must at a minimum run at Pentium or Pentium-equivalent speeds. Prior to 2002, the standard was 486 speeds or higher. Over 245,000 of the computers (90 percent) are connected to the Internet.

Approximately 94 percent of all computers are located in instructional rooms (computer labs, classrooms, and library media centers), with 97 percent of these machines considered Internet-capable. The 2004 data continue to document a shift in the location of computers. Since 1998, about one in three computers was located in a lab setting, ranging from a high of 36 percent in 1998 to a low of 31 percent in 2003 and 2004. The percentage of computers residing in classrooms has increased from 46 percent in 1998 to 56 percent in 2004. The shift is more noticeable when looking at the placement rates of computers within the instructional settings. In 2004, only 33 percent of "instructional" computers are located in labs as compared to 40 percent in 1998. The percent of "instructional" computers in classrooms has grown from 51 percent in 1998 to 97 percent in 2004.

Table 21

Numbers, Types, and Location of School Building Computers, 1998-2004

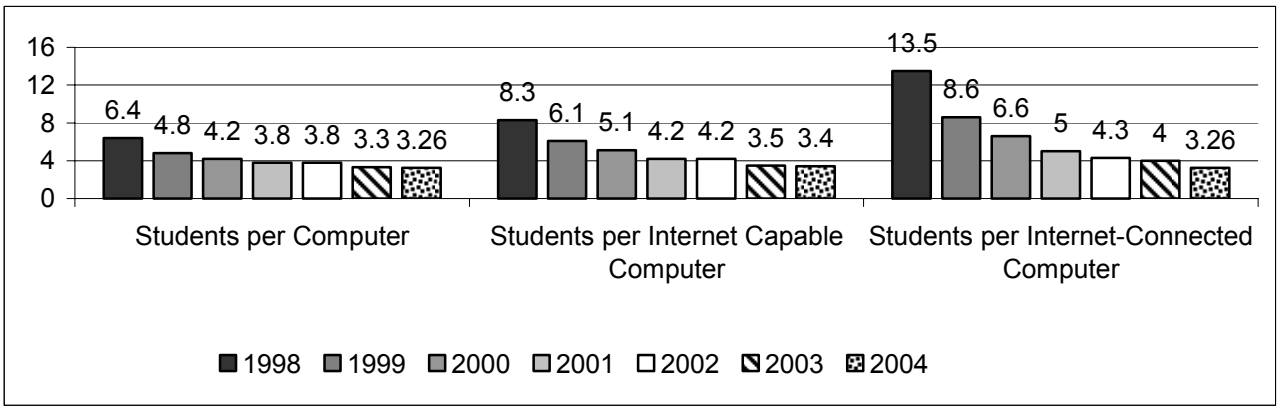
	1998 [2]	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*
Total number of computers (all types and speeds)	131,777	176,148	206,864	237,115	232,808	270,368	273,636
Located in all Instructional Rooms	109,608	158,908	187,298	219,188	211,382	242,981	257,347
▪ Percent of all computers	90%	90%	91%	92%	91%	90%	94%
Located in Classrooms	55,607	83,238	101,278	119,450	116,832	138,672	151,962
▪ Percent of all computers	46%	47%	49%	50%	50%	51%	56%
▪ Percent of all instructional rooms	51%	52%	54%	54%	55%	57%	59%
Located in Computer Labs	43,427	60,815	69,319	81,057	77,373	83,897	84,162
▪ Percent of all computers	36%	35%	34%	34%	33%	31%	31%
▪ Percent of all instructional rooms	40%	41%	37%	37%	37%	35%	33%
Equipped with Pentium/ equivalent or higher speeds	53,570	136,165	173,774	195,826	226,127	254,908	265,591
▪ Percent of all computers	44%	77%	84%	83%	97%	94%	97%
PC or PC-compatible	77,231	120,888	148,473	177,916	185,901	221,285	228,784
▪ Percent of all computers	64%	69%	72%	75%	80%	82%	84%
Multimedia Equipped	51,695	91,354	131,490	170,807	190,353	211,124	234,377
▪ Percent of all computers	39%	52%	64%	72%	82%	78%	86%
Internet Connected	63,800	105,872	145,221	179,509	205,068	222,522	244,976
▪ Percent of all computers	62%	60%	70%	76%	88%	82%	90%

[2] Total Computer statistic for 1998 was adjusted to estimate the entire population.

Figure 22 indicates the numbers of students per computer for 1998 through 2004. Ratios are determined using the COT data regarding numbers and types of computers and Core Data fall enrollment figures. As schools purchase new computers, older computers may be relocated within or surplussed out of the district. The numbers of computers in use continue to climb, resulting in a steady decline in the numbers of students per computers. Ratios are declining related to the number of students per high-speed (Internet-capable) computer and Internet-connected computer. The greatest decline relates to Internet-connected computers, as more and more buildings and computers are being connected to the Internet. Overall, the number of students per all computers has dropped from 6.4 in 1998 to 3.26 in 2004; the number of students per Internet-capable computers has dropped from 8.3 to 3.4; and, the number of students per Internet-connected computer has dropped from 13.5 to 3.26.

Figure 22

Number of Students per Computer, 1998-2004



Item 9 – Operating system and pdf software

For item nine, building contacts entered the number of computers using specific operating systems and specific versions of Acrobat Reader. Table 23 notes the operating systems being run by personal computers in 2003 and 2004. With 84 percent of the computers listed as PC or PC-compatible in Table 21, it is not surprising to find that Windows is the overall predominant operating system being used across the state. The 2004 data indicate more computers are being run by newer operating systems than last year. Over 20 percent of the computers operating with Windows run on Windows XP or NT, compared to 14 percent in 2003; nearly 30 percent of the Apple / Mac computers run OS 10 or newer, compared to 10 percent in 2003.

Table 23

Operating Systems of Building Computers, 2003 and 2004

Computer Type /Operating Systems	*Percent of all Computers*		*Percent within Computer Type*	
	2003	*2004*	*2003*	*2004*
Windows	77%	80%	94%	96%
▪ Windows 2000 or earlier	65%	62%	80%	74%
▪ Windows XP	7%	17%	8%	20%
▪ Windows NT	5%	2%	6%	2%
Apple / Mac	18%	17%	100%	100%
▪ OS 9.x or earlier	16%	12%	90%	72%
▪ OS 10.x or later	2%	5%	10%	28%

Table 24 indicates the availability of Acrobat Reader software in the buildings. As mentioned in the 2002 Census Report, DESE makes extensive use of pdf files on many of its websites. Data from the table below indicate that Apple / Mac computers have Acrobat Reader software at higher rates than the PC machines: 98 percent of the Apple / Mac computers have Acrobat Reader, compared to 84 percent of the PC computers. Nonetheless, the PCs that have Acrobat Reader are more likely to have the newer version: 69 percent of the PC computers have version 5 or newer, compared to 65 percent of the Apple / Mac computers. Overall, 2004 noted a big increase in the percentages of computers that have Acrobat Reader.

Table 24

Acrobat Reader Software, 2003 and 2004

Computer Type /Acrobat Reader Version	*Percent of all Computers*		*Percent within Computer Type*	
	2003	*2004*	*2003*	*2004*
PC Computers				
▪ Acrobat Reader 4.x or earlier	2%	12%	3%	15%
▪ Acrobat Reader 5.x or later	11%	57%	14%	69%
Apple / Mac Computers				
▪ Acrobat Reader 4.x or earlier	6%	5%	35%	33%
▪ Acrobat Reader 5.x or later	8%	11%	43%	65%

Item 10 – Library automation systems

Item ten deals with automated systems in place in building library media centers (LMCs). Table 25 lists the systems predominantly used during the past three years. While the top three systems remain the same for all three years, the numbers of automated libraries have jumped dramatically since 2002. Only 200 of the 2207 buildings indicated not having an automated system in 2004, down from 237 buildings in 2003. In 2002, over 1,600 buildings indicated that the card catalogs in the LMCs were not completely automated.

Table 25

Acrobat Reader Software, 2002 - 2004

	Number of LMCs		
Top Library Automation Systems	*2002*	*2003*	*2004*
Follet	153	696	748
Winnebago	133	362	412
Athena	85	322	318
Alexandria	25	156	151
Dynix	--	139	130

Hardware and Support II

To get a sense of technology resource distribution and access, building contacts are asked to indicate the various kinds of technologies available in the buildings and report on a specific list of technologies in the building's instructional rooms (computer labs, classrooms, and LMCs).

Item 11 – Technology in instructional rooms

Buildings are asked to report on a list of technologies that the state believes should be available in instructional rooms, based on current research and the eMINTS instructional model. These resources include telephone access, multimedia-equipped and Internet-connected computers, and teacher workstations that include a dedicated projection device (LCD panel or other type of video projector) and access to a printer. Tables 26 through 28 provide snap shots of these technologies located specifically in computer labs, instructional rooms, and library media centers (LMCs) for the last three years, compared to the base year of 1999. Overall, modest gains were noted in the majority of the technology categories. With two exceptions, computer labs and LMCs have greater access to education technologies than do classrooms. One exception involves telephones, with 87 percent of LMCs having phone access in 2004, compared to 63 percent of labs and 56 percent of

classrooms. The other exception pertains to the complete teacher workstation, where computer labs outranked libraries. The lowest rates of access for all room types, not surprisingly, involve having the full suite of technology available, followed by telephone access. Note that the item about Internet access was changed in 2004 to indicate real access rather than "wired for" access, thus the expected drop in 2004.

Table 26

Technologies in Computer Labs, 1999 and 2002 - 2004

Technology	*1999*	*2002*	*2003*	*2004*
Total rooms	2,824	3,303	3,723	3,747
Number with telephone access	Na	61%	63%	63%
Number with Internet access [(3)]	86%	96%	98%	92%
Number with multimedia-equipped computer	77%	91%	93%	92%
Number with internet-connected computer	72%	86%	91%	93%
Number with complete teacher workstation	43%	43%	52%	58%

[(3)] Item was updated in 2004, changed from "wired for Internet" to with "Internet access"

Data for the computer labs changed very little from 2002 to 2004, with the 2004 data almost identical to the 2003 data. Only moderate increases are noted in the numbers of labs with Internet-connected computers and labs with complete teacher workstations. In comparison to the other room types, computer labs continue to have the highest rates of Internet access, multimedia-equipped computers, and Internet-connected computers.

Table 27

Technologies in Instructional Rooms, 1999 and 2002 - 2004

Technology	*1999*	*2002*	*2003*	*2004*
Total rooms	49,936	55,142	60,248	60,856
Number with telephone access	Na	49%	55%	56%
Number with Internet access [(3)]	74%	96%	96%	92%
Number with multimedia-equipped computer	52%	85%	88%	89%
Number with internet-connected computer	46%	79%	85%	88%
Number with complete teacher workstation	13%	18%	21%	24%

[(3)] Item was updated in 2004, changed from "wired for Internet" to with "Internet access"

Classroom technology has improved substantially over the years. Progress was continued in 2004, with gains noted for every category except for the upgraded Internet access data cell. While these gains are marginal, they are noteworthy given the state's decrease in funding in 2003-2004. Classrooms are approaching parity with labs with regards to having at least one multimedia-equipped and Internet-connected computer. Still, only just over half of the classroom teachers have telephone access in 2004, and only about one in four has access to the full suite of classroom technologies.

Table 28

Library Media Centers, 1999 and 2002 - 2004

Technology	*1999*	*2002*	*2003*	*2004*
Total rooms	2,025	2,148	2,319	2,237
Number with telephone access	Na	85%	88%	87%
Number with Internet access [3]	75%	93%	98%	89%
Number with multimedia-equipped computer	75%	88%	90%	90%
Number with Internet-connected computer	68%	84%	89%	90%
Number with complete teacher workstation	32%	27%	37%	43%

[3] Item was updated in 2004, changed from "wired for Internet" to with "Internet access"

Data have remained fairly constant for the LMCs during the past three years, with a slight gain in the number of libraries with Internet-connected computers and almost double the number with the complete teacher workstation. For all years, LMCs indicate having telephone access at rates higher than those reported for computer labs and instructional rooms.

Items 12 and 13 – Internet-connected and multimedia-equipped computers
In 2003, one item asked for the number of Internet-connected and multimedia-equipped computers, by room type. Revised in 2004, item 12 asked about the status of Internet connectivity, by type of computer (desktop, laptop, or handheld) and type of connection (wired or wireless). Item 13 asked the type of connection (wired or wireless) for multimedia-equipped computers. School buildings continue to show progress in providing access to multimedia-equipped and Internet-connected computers, from 1998 to 2004, as documented in Table 19 below.

Table 29

Multimedia and Internet Connected Computers, 1998-2004

	1998 [2]	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*
Total number of computers (all types and speeds)	131,777	176,148	206,864	237,115	232,808	270,368	273,636
Equipped with Pentium/ equivalent or higher speeds	53,570	136,165	173,774	195,826	226,127	254,908	265,591
▪ Percent of all computers	44%	77%	84%	83%	97%	94%	97%
Multimedia Equipped	51,695	91,354	131,490	170,807	190,353	211,124	234,377
▪ Percent of all computers	39%	52%	64%	72%	82%	78%	86%
Internet Connected	63,800	105,872	145,221	179,509	205,068	222,522	244,976
▪ Percent of all computers	62%	60%	70%	76%	88%	82%	90%

[2] Total Computer statistic for 1998 was adjusted to estimate the entire population.

Of the computers reported as connected to the Internet in 2004, nearly all of the desktop computers are hard-wired (98.5 percent). The reverse is true for laptop computers, with three out of four (75 percent) having wireless connections. Of the computers reported as equipped for multimedia, 94.9 percent have a cable connection. The first time to inquire about handhelds, buildings reported access to nearly 1,900 machines. A total of 234,377 multimedia-equipped computers was reported in 2004, representing 86 percent of all the computers detailed in the first section of hardware and support and reported in Table 21. A total of 244,976 desktop and laptop computers have Internet connection, representing 90 percent of all computers.

Item 14 – Other school building technologies
Schools were asked about a variety of other technologies in item 14. The list of technologies includes older technologies such as printers, TV/VCRs, Probeware, word processors, scientific and graphing calculators, as well as newer technologies such as digital cameras/recorders, digitizers, digital satellite receivers, interactive whiteboards, video/multimedia distribution systems. Table 30 shows the technology holdings for 2001 through 2004. The 2004 data most generally exceed earlier statistics, especially for the newer, emerging technologies.

Table 30

Building Technologies, 2001 - 2004

Technology Unit	*2001*	*2002*	*2003*	*2004*
Alpha Smart/laptop processors	6,311	7,110	9,458	9,413
Assistive/adaptive devices	2,978	1,095	1,493	1,476
Cable TV end connections	13,991	17,234	24,972	27,096
Calculators				
• graphing calculators	27,279	24,244	25,895	28,780
• scientific calculators	24,385	21,494	24,165	27,016
CD-ROM / RW	35,573	26,838	26,245	35,421
Computer projection devices	7,773	9,819	11,189	12,448
Digital camcorders	NA	NA	1,164	7,206
Digital cameras	3,940	5,205	6,528	7,206
Fax machines	2,351	2,775	2,833	2,865
Interactive television	689	1,240	1,638	1,559
Interactive whiteboards	1,027	1,989	3,102	4,026
Multimedia distribution systems	311	963	1,151	866
Personal digital assistants	250	925	NA	2,780
Printers				
• dot matrix printer - black/white	NA	NA	4,667	3,685
• dot matrix printers – color	NA	NA	336	196
• inkjet printers - black/white	NA	NA	14,431	7,113
• inkjet printers – color	NA	NA	35,101	37,838
• laser printers – black/white	12,288	14,560	13,244	16,601
• laser - color	Na	Na	4,060	3,323
Probeware	1,405	1,121	1,210	1,383
Satellite reception				
• Satellite receivers	454	864	1,289	513
• Satellite end connections	NA	NA	NA	2,740
Scanners/digitizers	5,133	5,848	6,957	7,368
Video players				
• laserdisc/DVD players	5,680	5,849	7,484	8,876
• TV Monitors	41,683	42,032	45,270	45,123
• VCR Units	37,701	36,084	40,760	40,879
• TV/VCR combos	NA	NA	NA	1,588
Zip drives	NA	NA	NA	69,045

Item 15 – Technical maintenance and repair
First addressed in 2003, item 15 asked about the length of time needed for technical problems/ repairs to be resolved. Buildings report it typically takes two-to-three working days to resolve minor or routine technical problems or repairs – the same length of time reported in 2003.

Item 16 – Computers in working order
Added in 2004, item 16 asked about the percentage of computers in working order on any given day. Buildings report 90 percent or more computers are in working order on a typical or average day, with the average at 96 percent and the median percentage rate at 90.

Internet Connectivity / Distance Learning
This section of the COT deals with networking, Internet, and interconnectivity issues. The items address systems in place that facilitate quality, secure, and safe access to people and information both in and outside the school building.

Item 17 – Internet bandwidth
Table 31 profiles Internet access data reported since 2001. Except for 2001 data, ever increasing percentages of school buildings access the Internet through dedicated, direct means. In 2004, over 1,800 buildings report having a T1 line or greater bandwidth, with another 152 buildings reporting connectivity at higher speeds, and 40 buildings connected via cable television or digital satellite. Only five buildings report not having a direct connection to the Internet in 2003-2004.

Table 31

Building Internet Access, 2001 - 2004

Number of buildings	*2001*	*2002*	*2003*	*2004*
Total number of buildings	2,253	2,128	2,250	2,207
▪ with Internet access	1,773 79%	2,062 97%	2,211 98%	2,202 99.8%
▪ width of T1 bandwidth or greater	1,490 66%	1,753 82%	1,878 83%	1,852 84%

Item 18 – Servers and operating systems
Table 32 lists the predominant operating systems run on building servers, as reported in 2003 and 2004. Overall, there has been a substantial increase in the number of servers located in, or used by, school buildings during the last two years. Too, the data indicate increasing use of newer, more powerful operating systems.

Table 32

Server Operating Systems, 2003 and 2004

Number of servers running	*2003*	*2004*
• Novell	930	1,243
• Windows 2000	320	669
• Windows NT	229	429
• Linux	236	282
• Apple Share	229	174
• Mac Server OS	46	177
• Windows 2003	NA	62

Item 19 – Server administrative systems
Table 33 lists the predominant kinds of services run on the servers in 2003 and 2004. The majority of schools have servers that manage file-sharing, email, firewall, and web services. It should be

noted that MOREnet began offering *kinetic* in 2003, an email and web hosting service program, and announced that Internet filtering would also be available by late spring or early summer of 2004. This might explain the decreases in the numbers of building servers managing these services.

Table 33

Server Administrative Services, 2003 and 2004

Number of servers managing	*2003*	*2004*
• File-sharing	NA	1,414
• Email	1,328	1,316
• Internet filtering	1,424	1,274
• Firewall	792	1,087
• Web	1,117	1,037
• Proxy server	666	735
• Intranet	NA	713
• FTP	481	501

Items 20 and 21 – Building networks

These items asked buildings about the percentage of computers in the building that are connected through a local area network (LAN) and whether buildings in the districts are connected through a wide area network (WAN). Table 34 shows an increase in the numbers of computers connected to building networks or district networks, from 88 percent of computers in 2003 to 94 percent in 2004. While no increase was noted this year in terms of district/wide area networks, the table shows an increase in the number of buildings connected to all other buildings in the district via a district LAN or WAN since 2002.

Table 34

Building Networks, 2002 – 2004

	2002	*2003*	*2004*
Percent computers connected to building LAN (or district WAN)	NA	88%	94%
Percent buildings connected to a district LAN or WAN	72%	80%	80%

Item 22 – Distance learning systems

This item addresses the distance learning technologies available at the building level. Table 35 indicates that the most commonly used systems include cable television and desktop/IP-based videoconferencing. Less commonly used are interactive television and satellite programming. Over 400 buildings (20 percent) indicated having no distance learning system in place in 2004.

Table 35

Distance Learning Systems, 2002 - 2004

Distance Learning Systems	*2002*	*2003*	*2004*
Cable television	285	1,371	1,276
Desktop/IP-based videoconferencing	205	1,107	893
Satellite programming	163	642	518
Interactive Television	239	390	379

Item 23 – Internet filtering
All but 28 buildings reported having Internet filtering in place in 2004, with those that do not mostly comprised of early childhood centers and charter schools. The filtering products used in schools have stayed fairly constant the past four years, as indicated in Table 36 below. The most commonly used solutions include Cyber Patrol's Surf Control, Sonic Wall, and Border Manager. As mentioned on page 31, MOREnet now offers an Internet filtering solution, contracting with N2H2.

Table 36

Internet Filtering Solutions, 2001 - 2004

Percent Buildings Using the Following Internet Products	*2001*	*2002*	*2003*	*2004*
Cyber Patrol / Surf Control	414	516	491	456
Sonic Wall	82	211	342	402
Border Manager	69	316	224	372
Web Sense	103	205	217	220
Screen Door	136	183	201	194
8e6 Technologies / X-Stop	95	152	179	157
Squid	NA	72	121	155
N2H2	NA	49	102	123
Surf Watch	71	15	28	26

Technology Usage
The remaining building COT items address how building faculty, staff, and students use the education technologies available. Emphasis is placed on "routine" use, which is described as being used or implemented at least three times per week. As explained earlier in this report, the third cycle of the Missouri School Improvement Program (MSIP) requires districts to report these and similar data. Likewise, the scoring guide used for state approval of district technology plans places more emphasis on usage data. Both of these accountability measures factor in the following analyses.

Item 24 – Routinely used applications
After a noticeable dip in 2001, technology usage data rebounded substantially in 2002 and increased further in 2003 and 2004. As Tables 37 through 39 indicate, technology usage data are the highest ever reported -- for almost every category and user type.

Table 37 details technology usage for school building administrators (e.g., principals), in terms of the technologies they routinely use and the functions for which they use technology. In terms of different applications, principals are heavy users of email and the Web, at 97 percent and 96 percent respectively. Only two of five principals routinely use educational software, and less than a fourth routinely use online resources – which might be due to their not typically carrying a teaching load. With regards to technology uses or functions, principals are more apt to use technology for research, writing, email, and student data manipulation than for curriculum and instruction. Areas where principals showed the greatest increase from 2002 to 2004 include the use of technology to track student performance, manage student records, conduct research, and assess student performance.

Table 37

Routine Use of Technology by Building Principals, 1999 - 2004

Percent Principals who Routinely Use the Following Resources:	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*
▪ Educational software	37%	39%	34%	36%	41%	43%
▪ Electronic mail	77%	85%	74%	92%	97%	97%
▪ Internet / Web	69%	78%	71%	86%	94%	96%
▪ EBSCO Host or other database(s)	21%	25%	24%	24%	27%	21%
▪ Electronic encyclopedia	21%	22	22%	19%	20%	20%
▪ Electronic/automated library catalog	NA	NA	NA	23%	26%	27%

Percent Principals who Routinely Use Technology for the Following Functions:	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*
▪ Produce media/presentation products	26%	29%	31%	43%	46%	50%
▪ Produce written products	65%	68%	56%	67%	73%	77%
▪ Conduct online research	57%	62%	58%	69%	79%	80%
▪ Communicate with peers, experts, others	53%	58%	48%	63%	79%	87%
▪ Communicate with parents and students	NA	NA	NA	NA	NA	7%
▪ Prepare lesson plans	8%	9%	13%	14%	16%	15%
▪ Manage student records	61%	66%	60%	71%	81%	83%
▪ Track Student Performance	49%	54%	56%	67%	78%	81%
▪ Assess Student Performance	NA	NA	NA	58%	67%	72%
▪ Deliver/present instruction	13%	18%	21%	28%	37%	39%
▪ Enroll in online coursework	NA	NA	NA	NA	4%	7%

Table 38 covers routine teacher use of technology. In terms of the technology resources being used, over 90 percent of teachers routinely use email and Web resources, 75 use educational software, over 50 percent use library catalogs, and less than half use online encyclopedia, databases, or electronic library catalog. As to reasons for using technology, over 80 percent of teachers typically use technology for writing, 75 percent for research information collection, 74 percent for keeping track of student performance, and 69 percent to assess student performance, manage student records, or prepare lesson plans. Areas where teachers show the greatest increases in routine use, from 2002 to 2004, include the use of technology to manage student records, assess student performance, track student performance, deliver/present instruction, and conduct research. Interestingly, many of these were areas of greatest increases for building administrators/ principals as well.

Table 38

Routine Use of Technology by Teachers, 1999 - 2004

Percent Teachers who Routinely Use the Following Resources:	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*
▪ Educational software	69%	72%	59%	71%	76%	78%
▪ Electronic mail	60%	69%	65%	82%	87%	90%
▪ Internet / Web	61%	69%	67%	82%	88%	91%
▪ EBSCO host or other database(s)	25%	29%	27%	31%	33%	34%
▪ Electronic encyclopedia	41%	45%	36%	38%	40%	39%
▪ Electronic/automated library catalog	NA	NA	NA	46%	49%	54%

Table 38 (Continued)

Percent Teachers who Routinely Use Technology for the Following Functions:	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*
▪ Produce media/presentation products	20%	24%	29%	37%	43%	47%
▪ Produce written products	62%	66%	60%	71%	77%	81%
▪ Conduct online research	54%	59%	56%	67%	74%	75%
▪ Communicate with peers, experts, others	NA	NA	NA	NA	50%	68%
▪ Communicate with parents and students	41%	46%	39%	53%	62%	66%
▪ Prepare lesson plans	42%	47%	45%	59%	64%	66%
▪ Manage student records	40%	45%	46%	56%	64%	70%
▪ Track Student Performance	47%	52%	48%	61%	69%	74%
▪ Assess Student Performance	NA	NA	NA	55%	64%	69%
▪ Deliver/present instruction	20%	26%	29%	38%	46%	51%
▪ Enroll in online coursework	NA	NA	NA	NA	5%	9%

Table 39 depicts routine student use of technology. Of all user groups, students are the most likely to use educational software – at 81 percent compared to 78 percent of teachers and 43 percent for principals. Likewise, students use automated library services more frequently than other groups – at 62 percent compared to 54 percent for teachers and 27 percent for principals. While students routinely use technology more than they did in 1999, they lag behind teachers and administrators in using the Web and email and in using technology to produce media or written products. Note that the cell on conducting research was inadvertently left off of the 2004 COT.

Table 39

Routine Use of Technology by Students, 1999 - 2004

Students who Routinely Use the Following Resources:	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*
▪ Educational software	76%	78%	62%	75%	80%	81%
▪ Electronic mail	13%	15%	11%	14%	15%	13%
▪ Internet / Web	50%	55%	52%	63%	71%	74%
▪ EBSCO host or other database(s)	22%	25%	22%	27%	29%	31%
▪ Electronic encyclopedia	41%	45%	36%	38%	44%	44%
▪ Electronic/automated library catalog	NA	NA	NA	52%	57%	62%

Students who Routinely Use Technology for the Following Functions:	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*
▪ Produce media/presentation products	18%	22%	23%	32%	37%	29%
▪ Produce written products	58%	61%	52%	65%	68%	46%
▪ Conduct online research	52%	57%	49%	59%	63%	[4]
▪ Communicate with peers, experts, others	NA	NA	NA	NA	NA	12%
▪ Communicate with parents and students	NA	NA	NA	NA	NA	77%
▪ Enroll in online coursework	NA	NA	NA	NA	NA	7%

[4] Data set missing

Item 26 – School building technology integration

Table 40 indicates the positions available in, or available to, the school building for leadership in integrating technology into curriculum and instruction in 2003 and 2004. Integration assistance is

typically the charge of a district or building technology coordinator and/or building administrator. Encouraging are the increases in the numbers of buildings indicating assistance from library / media specialists and instructional technology specialists.

Table 40

School Leaders in Technology Integration, 2003 and 2004

Percent Buildings Indicating the Following Positions Directly Responsible for Providing Assistance	*2003*	*2004*
School building administrator	53%	57%
Technology coordinator	49%	58%
Teacher(s)	46%	48%
Instructional technology specialist	24%	32%
Library / media specialist	43%	54%

Item 27 – Teachers technology integration

Added in 2002, item 27 asked the building contact to estimate the percentage of teachers who fully integrate technology into curriculum and instruction. Based on the eMINTS instructional model, full integration is defined as the "ability to use instructional strategies that promote authentic project-based learning opportunities, student teamwork, collaboration and communication using technology in the classroom curriculum". Table 41 indicates that 53 percent of the buildings in 2004 report having teachers who fully integrate technology, compared to 41 percent in 2003 and 33 percent in 2002.

Table 41

Percent Teachers Integrating Technology, 2002 – 2004

	2002	*2003*	*2004*
Percent teachers fully integrating technology	33%	41%	53%

Item 28 – Technology-mediated feedback

Also added in 2002, item 28 asked about the technology-mediated feedback systems in place to help facilitate effective communication between schools and students and parents. Table 42 indicates that, like noted the last two years, the most commonly used services include email and voice mail. Interestingly, only 92 buildings indicated that they did not make use of any system in 2003 compared to 129 buildings in 2004.

Table 42

Percent Teachers Integrating Technology, 2002 – 2004

Percent Buildings Indicating the Following Systems in Place	*Number of Buildings*		
	2002	*2003*	*2004*
Email	822	2,007	2,207
Voice mail	546	1,053	1,037
Listserv	28	354	300
Automated absentee calling system	179	296	283
Homework hotline via telephone	221	280	281
Homework hotline via Web	62	160	185

D. Kent King
Commissioner of Education

Missouri Department of Elementary and Secondary Education
P.O. Box 480
Jefferson City, MO 65102-0480
http://dese.mo.gov

N=524

Missouri Census of Technology	**DISTRICT Level Census (2004)**

Complete this census form to reflect district technology status as of **March 1**.
It is recommended that you make a copy of the completed census for your files.
Consult the Core Data Manual and Help file, call (573) 751-8247, or e-mail: instrtech@dese.mo.gov for assistance as needed

Contact Name:	Contact Title:
District Telephone #:	District Fax #:
Contact E-mail:	District URL: (Prepopulated from screen 8)

PLANNING

1. Year district technology plan was last approved by the Department 2002 = 16 2003 = 451 2004 = 69

2. List any business or higher education institution with which you partner to support technology.

   93 = Business (Technology/Telecommunications) 82 = Higher Education 37 = Business (Non-technical)

TRAINING

3. Identify any board-approved education technology standards and what population(s) must meet the standards.
   <number and percent of districts responding>

   STANDARDS (Check ALL that apply)
   417 (80%) Locally-developed
   140 (27%) Adopted National Educational Technology Standards (ISTE)
   34 (7%) Adopted Standards for Technological Literacy: Content for the Study of Technology (ITEA)
   35 (7%) Other (specify) _____
   65 (12%) None

   POPULATION(S) (Check ALL that apply)

   Students:
   401 (77%) PreK-2
   420 (80%) 3-5
   437 (83%) 6-8
   375 (72%) 9-12
   35 (60%) Area career center (N=58)
   64 (12%) None

   Staffs:
   400 (76%) Administrators
   414 (79%) Teachers
   350 (67%) Support services staff
   103 (20%) None

4. Estimate the percentage of administrators and support services staff, in the administrative building/office(s), at each skill level of technology use.

	Beginner	*Intermediate*	*Advanced*
Administrators	4,800 (9%)	34,363 (66%)	13,339 (25%)
Support services staff	7,819 (15%)	30,453 (58%)	13,943 (27%)

HARDWARE & SUPPORT

5. Estimate the total FTE of district-level staff who are directly responsible for technical maintenance and support of hardware.

   Total = 1093.70 and Average = 2.09

6. Enter the quantity of computers, by type, currently used in the administrative building/office(s). Total Computers = 16,077

Apple/Mac	*Number of Computers*	*PC Compatible*	*Number of Computers*
• LC series or lower	11	• 486 or earlier	389
• Power Mac series	86	• Pentium I or II	3020
• G3	461	• Pentium III	4604
• G4 or later	337	• Pentium IV or later	4990
Sub-Total = 895 (6%)		• Celeron	1414
		• AMD (under 450 MHz)	218
		• AMD (450 MHz or higher)	547
		Sub-Total = 15182 (94%)	

7. Enter the quantity of computers in the administrative building/office(s) currently using the following.

Apple/Mac	*Number of Computers*	*PC Compatible*	*Number of Computers*
OS 9.x or earlier	512	Windows 1998 or earlier	6104
OS 10.x or later	463	Windows NT	358
Total	975	Windows 2000	2184
		Windows XP	4275
Acrobat Reader		Total	12,921
Acrobat Reader 4.x or earlier	253		
Acrobat Reader 5.x or later	962	*Acrobat Reader*	
Total	1215	Acrobat Reader 4.x or earlier	1986
		Acrobat Reader 5.x or later	9472
		Total	11458

INTERNET CONNECTIVITY-DISTANCE LEARNING

8. Identify the operating system used on the server(s) in the administrative building/office(s).

23 (3%)	Apple Share	131 (19%)	Windows 2000
88 (13%)	Linux	130 (19%)	Windows NT
17 (2%)	Mac Server OS	111 (14%)	Other
283 (41%)	Novell	18 (3%)	None

9. Identify district-supported administrative systems. (Check ALL that apply)

511 (98%)	Accounting /budgeting/payroll	345 (66%)	IEP management
222 (42%)	Attendance staff	108 (21%)	Instructional management system
461 (88%)	Attendance student	242 (46%)	Inventory
452 (86%)	Communication/email	432 (82%)	Library catalog
355 (68%)	Discipline	69 (13%)	School safety
134 (26%)	Distance education	158 (30%)	Student fees
181 (35%)	Extra curricular (scheduling)	304 (58%)	Student performance
431 (82%)	Food Service	103 (20%)	Teacher evaluations
346 (66%)	Health Service	220 (42%)	Technical support
196 (37%)	Hosting classroom websites	201 (38%)	Transportation

TECHNOLOGY USAGE

10. Technology is integrated in the following core content areas(s). (Check ALL that apply)

    497 (95%) Communication Arts 451 (86%) Mathematics 454 (87%) Science 444 (85%) Social Studies

11. Estimate the percentage of the following populations the district provides email accounts.
    <number and percent of districts responding and average percentage rate of students with accounts>

Students:		Staff:	
22 / 4% (77%)	Pre K-2	515 / 98% (98%)	Administrators
51 / 10% (54%)	3-5	510 / 97% (93%)	Teachers
72 / 14% (72%)	6-8	494 / 94% (82%)	Support services staff
125 / 24% (45%)	9-12	8 / 2% (NA)	None
58 /100% (100%)	Area career center		
355 / 68% (NA)	None		

12. Estimate the percentage of the district's 6th graders who are technologically literate.

    Average = 86% and Median = 90%

TECHNOLOGY FUNDING

13. Estimate the amount for which items were purchased or budgeted.

Items Purchased or Budgeted	*Last Fiscal Year*	*Current Fiscal Year*	*Next Fiscal Year*
Hardware	$40,328,446	$38,380,282	$34,986,027
Software: instructional	6,239,818	5,839,898	5,265,403
Software: administrative	5,364,172	7,689,236	8,013,669
Professional development	6,993,433	7,228,577	6,623,914
Connectivity/distance learning	5,295,126	4,831,851	5,307,742
Technical support	19,480,114	19,099,793	18,589,486
Infrastructure/retrofitting/other	8,696,322	8,947,579	8,867,148
Total	$92,397,431	$92,017,216	$87,653,389

14. Enter the dollar value of the district's E-rate discounts for the current year as indicated in USAC's funding commitment letters.

    Total = $32,575,547 (381 districts responded) and Average = $85,500

15. Estimate the percentage of the discount used to support education technology.

    Average = 74% and Median = 90%

D. Kent King
Commissioner of Education

Missouri Department of Elementary and Secondary Education
P.O. Box 480
Jefferson City, Missouri 65102-0480
http://dese.mo.gov

N = 2,207

Missouri Census of Technology | **SCHOOL Building Census Form (2004)**

Complete this census form to reflect school building status as of **March 1**.
It is recommended that you make a copy of the completed census for your files.
Consult the Core Data Manual and Help file, call (573) 751-8247, or e-mail: instrtech@mail.dese.state.mo.us for assistance as needed.

Contact Name:	Contact Title:
School Telephone #:	School Fax #:
Contact E-mail:	School URL: (Prepopulated from screen 8)

PLANNING

1. The school building technology plan is:

   160 Stand-alone plan 1975 Integrated in district plan 63 Do not have building plan

2. List any business or higher education institution with which you partner to support technology.

   237 = Higher Education 277 = Business (Technology/telecommunications) 147 = Business (Non-technical)

TRAINING

3. Enter the quantity of professional development hours offered this school year to school building staff to upgrade technology and computer skills in the following areas.

Training Topic / Hours	*Administrators Total/Average hours*		*Teachers Total/Average hours*		*Support Services Total/Average hours*	
Introduction to operations	9,306	4.21	13,312	6.03	8,387	3.81
Using software applications	34,852	15.79	40,189	18.21	39,280	17.80
Using Internet resources	10,475	4.75	17,515	7.94	9,117	4.13
Curriculum integration	15,215	6.89	24,138	10.94	10,210	4.63
Teaching strategies/applications	9,951	4.51	21,576	9.78	6,296	2.85
Using assistive technology devices	2,928	1.33	5,074	2.30	1,225	.56
Other specify_____	1,147	.52	1,846	.84	374	.17

4. Estimate the percentage of faculty/staff in the school building at each skill level of technology use.

Faculty/Staff	*Beginner*	*Intermediate*	*Advanced*
Administrator(s)	17343 (8%)	151,894 (69%)	50,489 (23%)
Teachers	41,661 (19%)	130,413 (59%)	47,699 (22%)
Technology support staff	6,198 (3%)	35,166 (17%)	164,297 (80%)
Support services staff	61,431 (29%)	112,304 (52%)	39,485 (19%)

5. Indicate the number of days during the current school year scheduled for professional development activities where teachers in the school building can learn/upgrade their technology and computer skills.

   Total Days = 8341 and Average = 3.78

6. Indicate the number of eMINTS-trained teachers in the school building.

   268 teachers in 142 buildings Completed year 1 only and 326 teachers in 131 buildings Completed both year 1 & 2

HARDWARE AND SUPPORT I

7. Estimate the total (FTE) of school building staff or others who are directly responsible for technical maintenance and/or support of hardware. *<percent buildings responding and average FTE>*

78% (9.66) District staff	9% (5.82) Students	18% (4.82) Vendors/contractors
36% (8.54) School certificated staff	2% (5.77) Parents/community	2% (4.86) Other
21% (6.62) School non-certificated staff	1% (3.26) Regional centers/RPDCs	4% None

8. Enter the quantity of computers, by type, currently being used in these locations within the school building.

	Computer Labs	*Instructional Rooms*					*Library/Media Centers*	*Admin. Offices*	*Total*
		PreK-2	*3-5*	*6-8*	*9-12*	*ACC*			
Apple/Mac									
LC series and lower	610	1,012	968	525	432	37	179	80	3,843
Power Mac series	1,859	1,643	2379	1,396	816	86	299	153	8631
G3	8331	2,813	4380	3,195	2691	119	1902	708	24,139
G4 or later	3,096	643	953	1,128	1,235	241	616	327	8,239
Sub-Total	13,896	6,111	8,680	6,244	5,174	483	2,996	1,268	44,852
	(31%)	(26,692 = 60%)					(7%)	(3%)	(16.4%)
PC Compatible									
486 or earlier	806	641	693	529	833	65	426	209	4,202
Pentium I or II	15,890	7,386	8,563	7,316	11,886	999	5,021	3,275	60,336
Pentium III	20,665	4,919	8,998	8,157	13,967	1,341	4,770	5,419	68,236
Pentium IV or later	19,175	3,317	7,629	5,326	8,436	1,814	4,094	4,142	53,933
Celeron	9,146	2,373	3,973	2,772	3,494	634	2,335	1,370	26,097
AMD (under 450 MHz)	1,379	341	505	650	1,064	36	523	246	4,744
AMD (450 MHz or higher)	3,205	858	1,476	888	2,933	158	1,058	660	11,236
Sub-Total	70,266	19,835	31,837	25,638	42,613	5,047	18,227	15,321	228,784
	(31%)	(124,970 or 55%)					(8%)	(7%)	(83.6%)
TOTAL	84,162	25,946	40,517	31,882	47,787	5,530	21,223	16,589	273,636
	(31%)	(151,662 or 55%)					(8%)	(6%)	(100%)

9. Enter the quantity of computers in the school building using the following.

Apple/Mac	*Number of Computers*
OS 9.x or earlier	33,249
OS 10.x or later	13,159
Total	46,408
Acrobat Reader	
4.x or earlier	14,915
5.x or later	29,003
Total	43,918

PC Compatible	*Number of Computers*
Windows 1998 or earlier	141,178
Windows NT	5,337
Windows 2000	28,098
Windows XP	45,531
Total	220,144
Acrobat Reader	
4.x or earlier	33,778
5.x or later	157,303
Total	191,081

10. Identify the library automation system used in the school building.

151	Alexandria	130	Dynix	412	Winnebago
53	Alice	748	Follett	200	None
318	Athena	34	Gateway	87	Other (Various)
26	Calico	48	SIRSI		

HARDWARE AND SUPPORT II

11. Enter the quantity of ROOMS in the following locations, within the school building.

Number of Rooms…	Computer Labs	Instructional Rooms	Library/ Media Center	Total
total	3,747	60,856	2,237	66,840
with telephone access	2,361	33,984	1,951	38,296
wired for the Internet	3,440	56,064	1,987	61,491
with one or more multimedia equipped computers	3,450	54,060	2,021	59,531
with one or more multimedia equipped and Internet connected computers	3,483	53,663	2,022	59,168
with one or more multimedia equipped and Internet connected computers, printer access, and projection device	2,176	14,515	953	17,644

12. Enter the quantity of computers connected to the Internet, within the school building.

COMPUTERS connected to the Internet	Cable Connection	Wireless Connection	Total
• Desktop	227,641	3423	231,064
• Laptop	3,455	10,457	13,912
• Handheld	1,561	332	1,893
Total	232,657	14,212	246,869

13. Enter the quantity of computers multimedia equipped, within the school building.

	Cable Connection	Wireless Connection	Total
COMPUTERS Multimedia equipped	222,496	11,881	234,377

14. Enter quantities for the following units/systems in the school building.

Alpha Smart/word processors	9413	Interactive television	1559	Probeware	1383
Assistive/adaptive devices	1476	Interactive whiteboards	4026	Satellite reception	
Cable TV end connections	27096	Multimedia distribution system	866	Satellite receivers	513
Calculators		Personal digital assistants	2780	Satellite end connections	2740
Graphing calculators	28780	Printers		Scanners/digitizers	7368
Scientific calculators	27016	Dot matrix B & W	3685	Video players	
CD-ROM/RW	35421	Dot matrix color	296	Laserdisc/DVD players	8876
Computer projection devices	12448	Inkjet B & W	7113	TV monitors	45123
Digital cameras	7206	Inkjet color	37838	VCR units	40879
Digital camcorders	1738	Laser B & W	16601	TV/VCR combos	1588
Fax machines	2865	Laser color	3323	Zip drives	69045

15. Estimate the typical (average) timeframe for resolving minor or routine technical problems/repairs.

601 (5%) 1 working day	310 (14%) 4-6 working days	48 (2%) 11 working days or more
1122 (51%) 2-3 working days	116 (5%) 7-10 working days	

16. Estimate the percentage of computers in the school building in working order on a typical (average) day.

Average Percentage = 96% and Median Percentage = 90%

INTERNET CONNECTIVITY-DISTANCE LEARNING

17. Identify the bandwidth of the school building's connection to the Internet.

105 (5%) Less than half T	96 (4%) 3-9 mb	19 (1%) Cable Modem
41 (2%) Half T (768 k)	108 (5%) 10-45 mb	21 (1%) Digital Satellite (DSL)
1735 (79%) T1 (1,544 k)	9 (0%) OC1 or greater	68 (3%) Other
5 (0%) None		

18. Identify the operating system used on the school building's server(s). (Check ALL that apply)

1243 Novell	669 Windows 2000	17 Windows XP
282 Linux	62 Windows 2003	408 Other
177 Mac Server OS	429 Windows NT	135 None

19. Identify the services run on the server(s). (Check ALL that apply)

1316 Email	501 FTP	1037 Web
1414 File-sharing	713 Intranet	191 Other (SIS/Data = 55)
1274 Filtering	735 Proxy Server	507 None
1087 Firewall	189 Telnet	

20. Estimate the percentage of computers connected to the school building LAN.

Average = 94% and Median = 95%

21. The school building is connected to the administrative building/office(s) AND all other school buildings in the district through a Wide Area Network (WAN).

1766 (80%) Yes and 443 (20%) No

22. Identify which distance learning system(s) are available to students in the school building. (Check ALL that apply)

1276 Cable TV	379 Interactive TV (video classroom)
242 Compressed video	518 Satellite
893 Desktop technologies/IP/MOREnet	254 Other (various)
	439 None

23. Identify the filtering software/hardware used in the school building. (Check ALL that apply)

372 Border Manager	412 Sonic Wall	157 X Stop/8e6
456 Cyber Patrol/Surf Control	155 Squid	28 None
123 N2H2	26 Surf Watch	457 Other (3Com=62, LinkWall=36,
194 Screen Door	220 Web Sense	Cybersitter=28, DansGuardian=26)

TECHNOLOGY USAGE

24. Estimate the percentage of administrators, teachers, and students in the school building who routinely use the following applications.

Applications	Administrators	Teachers	Students
Educational software	94,223 (43%)	171,230 (78%)	178,818 (81%)
Email	214,047 (97%)	199,563 (90%)	29,475 (13%)
Internet/Web	211,065 (96%)	200,703 (91%)	164,002 (74%)
EBSCO host or other periodical database	45,867 (21%)	74,109 (34%)	68,461 (31%)
Electronic encyclopedia	44,143 (20%)	86,367 (39%)	96,353 (44%)
Electronic/automated library catalog	60,430 (27%)	118,499 (54%)	137,541 (62%)

25. Estimate the percentage of administrators, teachers, and students in the school building who routinely use the computer for the following functions.

Functions	Administrators	Teachers	Students
Produce media, web, or multimedia products to demonstrate learning, make presentations	110,261 (50%)	102,578 (47%)	64,610 (29%)
Produce written or print products to demonstrate learning, make presentations	170,824 (77%)	177,811 (81%)	102,330 (46%)
Communicate with peers, experts, others	192,893 (87%)	149,011 (68%)	27,191 (12%)
Communicate with parents and students	15,078 (7%)	145,619 (66%)	170,523 (77%)
Enroll in online courses this year	14,960 (7%)	19,395 (9%)	1,591 (7%)
Manage student records (spreadsheet/database)	183,765 (83%)	153,587 (70%)	NA
Track student performance	178,595 (81%)	162,783 (74%)	NA
Assess student performance	158,742 (72%)	151,804 (69%)	NA
Conduct online research	177,305 (80%)	164,586 (75%)	NA
Deliver and present instruction	85,026 (39%)	110,968 (51%)	NA
Prepare lesson plan(s)	32,599 (15%)	145,950 (66%)	NA

26. Estimate the total FTE of school building staff or others who are directly responsible for leadership in integrating technology into the curriculum. <*Number and Percent Buildings Responding and Average FTE*>

710 / 32% (11.18) Instructional technology specialist
1200 / 54% (11.08) Library/media specialist
1250 / 57% (13.46) School administrator
1055 / 48% (15.58) Teacher
1282 / 58% (10.77) Technology coordinator
201 / 9% (9.22) Outside vendor
176 / 8% (7.64) Regional centers/RPDCs
195 / 9% Other (District staff=97)

27. Estimate the percentage of teaching staff in the school building who are able to fully integrate technology into curriculum and instruction.

Average = 53%

28. Identify the technology-mediated feedback system(s) used in the school building. (Check ALL that apply)

283 Automated absentee calling system
140 Electronic bulletin board
2207 Email
194 Homework hotline via web
281 Homework hotline via telephone
300 Listservs
1062 Voice Mail
393 Other (Various)
129 None

Cross Reference of 2004 COT Items and METSP Goals and Objectives - by METSP Goals

METSP Goal and Objective	*2004 COT Item*
1. Student Learning	
a. State Board endorses/adopts student technology standards	NA
b. Districts establish/endorse student technology standards	District 1
c. Students will be technologically literate by age 12 (end of sixth grade)	District 12
d. Students routinely use Web and educational software	Building 24
e. Students routinely use technology to conduct research and produce products	Building 25
f. Sample of eMINTS student will score satisfactory or above on the MAP reading test	NA
g. 5% fewer of eMINTS sample students will score in Step 1 or Progressing on the MAP annually	NA
h. eMINTS sample students in special categories will perform better, on average, on the MAP than non-eMINTS students	NA
i. High schools will provide courses via distance learning	NA
2. Teacher Preparation	
a. State Board establishes or endorses teacher technology standards	NA
b. Districts establish/endorse teacher technology standards	District 3
c. Districts integrate technology into the core curriculum areas	District 10
d. Teachers possess intermediate or advanced technology skills	Building 4
e. Teachers routinely use Web and educational software	Building 24
f. Teachers routinely use technology to conduct research, prepare lessons, assess and manage student data, produce presentations and deliver instruction	Building 25
g. Teachers fully integrate technology in curriculum and instruction	Building 27
h. Elementary buildings will have at least 2 eMINTS trained teachers	Building 6
3. Administration/Management	
a. State Board establishes or endorses administrator technology standards	NA
*Districts establish/endorse administrator technology standards <Added 2003>	District 3
b. Districts have state-approved technology plans, tied to CSIPs, address all TFAs, promote PD, and make use of E-rate	District 1, 14, 15
c. Districts partner with business / higher education to help with technology planning, implementation or evaluation	District 2
d. Administrators possess intermediate or advanced technology skills	District 4 Building 4
e. Districts provide email accounts to administrators, teachers, and support staff	District 11
f. Building administrators routinely use Web and education software	Building 24
g. Principals routinely use technology for data management, assess and track student performance, communicate with others	Building 25
h. Buildings have technology- mediated feedback system(s)	Building 28
4. Equitable Access	
a. Districts maintain adequate LAN, connected to Internet	Building 21
b. Buildings are connected to district LAN/WAN, connected to Internet, providing web and email services	Building 19 & 20
c. Buildings have video conferencing and/or multimedia distribution system	Building 22
d. Classrooms are equipped with full teacher workstations and Internet-connected computers at 2:1 ratio of computers to students	Building 8 & 11
5. Technical Support	
a. Districts employ/contract technical staff	District 5
b. Buildings have on-site technical support (both technical and instructional)	Building 7 & 26
*Buildings have technical problems/repairs fixed in 3 working days <added 2004>	Building 15 & 16

Cross Reference of 2004 COT Items and METSP Goals and Objectives - by COT Items

District-Level Census of Technology

Census of Technology Item	*METSP Goal/Objective*
1. Year technology plan approved by state	3.a.
2. Business or higher education partner(s)	3.c.
3. Board-approved education technology standards, by kind and population	1.b., 2.b.
4. Technology skill levels of district administrators and support services staff	3.d.
5. District staff responsible for technical maintenance and support	5.a.
6. Number computers (by type) located in administrative office(s)	(Goals 2, 3, 4)
7. Computer operating systems	(Goal 3)
8. Operating systems of servers	(Goal 3)
9. District-supported administrative systems	3.f.
10. Core curriculum areas where technology is integrated	2.c.
11. District-provided email accounts, by user type and [student] grade levels	3.c.
12. Percent 6th graders technologically literate	1.c.
13. Technology-related budget for previous, current, and next fiscal year	3.b.
14. E-rate discount amount for current year	3.b.
15. Percent E-rate discount budgeted back into education technology	3.b.

School Building-Level Census of Technology

Census of Technology Item	*METSP Goal/Objective*
1. Building technology plan status (stand-alone or part of district plan)	NA
2. Business or higher education partner(s)	NA
3. Number professional development hours offered to upgrade [various] technology skills	(Goal 2)
4. Technology skill levels of building administrators, faculty, technical, and support staff	2.d., 3.d.
5. Number days scheduled for professional development to learn/upgrade technology skills	(Goal 2)
6. Number of eMINTS-trained teachers	2.h.
7. Building-level staff responsible for technical maintenance	5.b.
8. Number of computers in building, by type and location	4.d.
9. Computer operating systems	(Goal 3)
10. Automated library system	(Goal 3)
11. Equipment located in instructional rooms, by type of equipment and room	4.d.
12. Number of Internet-connected computers (wireless and cable connected)	4.d.
13. Number multimedia-equipped computers (wireless and cable connected)	(Goals 1,2,4)
14. Numbers of [various] education technologies	(Goals 1,2,4)
15. Typical timeframe for resolving routine/minor technical problems and repairs	5.b.
16. Percent computers in working order on a typical day	5.b.
17. Bandwidth of building's Internet connection	4.a.
18. Operating systems of servers in the building	(Goals 3,4)
19. Service(s) run on the servers (or available through district LAN)	4.b.
20. Percent computers connected to building LAN (or via district WAN)	4.b.
21. Building is connected to all other buildings in the districts	4.b.
22. Distance learning system(s) available in building	1.i.
23. Internet filtering solution(s) being used	(Goals 1,2,3,4)
24. Percent administrators, teachers and students routinely using education technologies	1.d., 2.e., 3.f.
25. Percent administrators, teachers, and students routinely using technology functions	1.e., 2.f., 3.g.
26. Building-level staff responsible for leadership in integrating technology into curriculum	5.b.
27. Percent of teaching staff able to fully integrate technology into curriculum and instruction	2.g.
28. Technology-mediated feedback system used in the building (or via district)	3.h.